

IN THE CLAIMS:

1. (Canceled)

2. (Currently Amended) The integrated chip package of Claim 1 An integrated chip package, comprising:

at least one semiconductor chip having a first surface and a second surface;

an intermediate substrate electrically coupled via conductive bumps to the first surface of the at least one semiconductor chip;

a planar package substrate having a first surface electrically coupled to the intermediate substrate via a plurality of bonding wires, the intermediate substrate arranged above and spaced apart from the planar package substrate; and

a heat sink having side portions extending towards the planar package surface, the heat sink thermally coupled to the second surface of the semiconductor chip so that heat generated from the at least one semiconductor chip flows towards the heat sink,

wherein the second surface of the at least one semiconductor chip is adhesively bonded to the heat sink.

3. (Currently Amended) The integrated chip package of Claim 1 An integrated chip package, comprising:

at least one semiconductor chip having a first surface and a second surface;

an intermediate substrate electrically coupled via conductive bumps to the first surface of the at least one semiconductor chip;

a planar package substrate having a first surface electrically coupled to the intermediate substrate via a plurality of bonding wires, the intermediate substrate arranged above and spaced apart from the planar package substrate; and

a heat sink having side portions extending towards the planar package surface, the heat sink thermally coupled to the second surface of the semiconductor chip so that heat generated from the at least one semiconductor chip flows towards the heat sink,

wherein the heat sink is substantially thermally isolated from the planar package substrate.

4. (Currently Amended) The integrated chip package of Claim 4, wherein the intermediate substrate is formed from a material selected from the group consisting of silicon, polysilicon, and glass.

5. – 6. (Canceled)

7. (Currently Amended) The integrated chip package of Claim 4, wherein the conductive bumps are formed from a material selected from the group consisting of Pb/Sn solder, Au, Ag, alloys of Au and Ag, and metallic coated polymeric studs.

8. (Currently Amended) The integrated chip package of Claim 4, wherein the intermediate substrate includes a circuit plane selected from the group consisting of power planes, ground planes, and interconnect planes.

9. – 10. (Canceled)

11. (Currently Amended) The integrated chip package of Claim 4, wherein the planar package substrate includes conductive pads on a second surface to electrically connect the integrated chip package to a circuit board via conductive bumps.

12. (Currently Amended) The integrated chip package of Claim 4, further comprising a support material arranged between the planar package substrate and the intermediate substrate.

13. (Canceled)

14. (Currently Amended) The method of Claim 13 further including A method of forming an integrated chip package, comprising:

providing a semiconductor chip having a conductor pattern on a first surface;
electrically coupling the conductor pattern on the semiconductor chip to an intermediate substrate via a first set of conductive bumps;
providing a heat sink having side portions;
thermally coupling a second side of the semiconductor chip to the heat sink so that heat generated from the semiconductor chip flows towards the heat sink;
adhesively bonding the first surface of the semiconductor chip to the heat sink;
arranging a planar package substrate below and spaced apart from the intermediate substrate; and
electrically coupling the intermediate substrate to a first surface of the planar package substrate via a plurality of bond wires.

15. (Currently Amended) The method of Claim 13 further including A method of forming an integrated chip package, comprising:

providing a semiconductor chip having a conductor pattern on a first surface;
electrically coupling the conductor pattern on the semiconductor chip to an intermediate substrate via a first set of conductive bumps;
providing a heat sink having side portions;

thermally coupling a second side of the semiconductor chip to the heat sink so that heat generated from the semiconductor chip flows towards the heat sink;

arranging a planar package substrate below and spaced apart from the intermediate substrate;

thermally isolating the heat sink from the planar package substrate; and

electrically coupling the intermediate substrate to a first surface of the planar package substrate via a plurality of bond wires.

16. (Currently Amended) The method of Claim 13 15, further including forming the intermediate substrate from a material selected from the group consisting of silicon, polysilicon, and glass.

17. – 18. (Canceled)

19. (Currently Amended) The method of Claim 13 15, further including forming a circuit plane on the intermediate substrate, wherein the circuit plane is selected from the group consisting of power planes, ground planes, and interconnect planes.

20. (Currently Amended) The method of Claim 13 15, further including forming conductive pads on a second surface of the planar package substrate operable to electrically couple the integrated chip package to a circuit board via a second set of conductive bumps.

21. – 22. (Canceled)

23. (Currently Amended) The integrated chip package of Claim 22 further including An integrated chip package, comprising:

at least one semiconductor chip configured for flip chip mounting, having a first surface and a second surface;

a planar package substrate having a first surface and a second surface, the planar package substrate second surface to electrically couple the integrated chip package to a circuit board via conductive bumps;

a flip chip conversion means arranged above and spaced apart from the planar package substrate first surface and electrically coupled between the at least one semiconductor chip first surface and the planar package substrate first surface;

a means for sinking heat from the second surface of the semiconductor chip so that heat generated from the semiconductor chip flows towards the means for sinking heat, the means for sinking heat having side portions extending towards the planar package substrate; and

means for adhesively bonding the first surface of the semiconductor chip to the heat sinking means.

24. (Currently Amended) The integrated chip package of Claim 22 further including An integrated chip package, comprising:

at least one semiconductor chip configured for flip chip mounting, having a first surface and a second surface;

a planar package substrate having a first surface and a second surface, the planar package substrate second surface to electrically couple the integrated chip package to a circuit board via conductive bumps;

a flip chip conversion means arranged above and spaced apart from the planar package substrate first surface and electrically coupled between the at least one semiconductor chip first surface and the planar package substrate first surface;

a means for sinking heat from the second surface of the semiconductor chip so that heat generated from the semiconductor chip flows towards the means for sinking heat, the

means for sinking heat having side portions extending towards the planar package substrate;
and

means for thermally isolating the heat sinking means from the planar package substrate.

25. (Currently Amended) The integrated chip package of Claim 22 24, further including forming the flip chip conversion means from a material selected from the group consisting of silicon, polysilicon, and glass.

26. (Canceled)

27. (Currently Amended) The integrated chip package of Claim 22 24, wherein the flip chip conversion means includes a means for electrically interconnecting.

28. (Currently Amended) The integrated chip package of Claim 22 24, wherein the second surface of the planar package substrate includes conductive pads for electrically interfacing to the conductive bumps.

29. (Currently Amended) An integrated chip package, comprising:
at least one semiconductor chip having a first surface and a second surface;
an intermediate substrate electrically coupled via conductive bumps to the first surface of the at least one semiconductor chip;
a planar package substrate having a first surface electrically coupled to the intermediate substrate via a plurality of bonding wires, the intermediate substrate arranged above the planar package substrate;
a heat sink having side portions extending towards the planar package surface, the

heat sink thermally coupled to the second surface of the semiconductor chip so that heat generated from the at least one semiconductor chip flows towards the heat sink, and

wherein the heat sink is substantially thermally isolated from the planar package substrate; and

a support material arranged between the planar package substrate and the intermediate substrate.

30. (Currently Amended) An integrated chip package, comprising:

at least one semiconductor chip configured for flip chip mounting, having a first surface and a second surface;

a planar package substrate having a first surface and a second surface, the planar package substrate second surface to electrically couple the integrated chip package to a circuit board via conductive bumps;

a flip chip conversion means arranged above the planar package substrate first surface and electrically coupled between the at least one semiconductor chip first surface and the planar package substrate first surface;

a means for sinking heat from the second surface of the semiconductor chip so that heat generated from the semiconductor chip flows towards the means for sinking heat, the means for sinking heat having side portions extending towards the planar package substrate;

means for thermally isolating the heat sinking means from the planar package substrate; and

a support material arranged between the planar package substrate and the flip chip conversion means.

31. (New) The integrated chip package of Claim 2, wherein the intermediate substrate includes a circuit plane selected from the group consisting of power planes, ground planes, and interconnect planes.

32. (New) The integrated chip package of Claim 2, further comprising a support material arranged between the planar package substrate and the intermediate substrate.

33. (New) The method of Claim 14, further including forming a circuit plane on the intermediate substrate, wherein the circuit plane is selected from the group consisting of power planes, ground planes, and interconnect planes.